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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/365,118	07/30/1999	DIETER MICHEL	56/327	1392

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BRINKS HOFER GILSON & LIONE  
P.O. BOX 10395  
CHICAGO, IL 60610

EXAMINER

LYONS, MICHAEL A

ART UNIT      PAPER NUMBER

2877

DATE MAILED: 08/24/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/365,118

Applicant(s)

MICHEL ET AL.

Examiner

Michael A. Lyons

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 12 July 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-25 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 July 1999 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

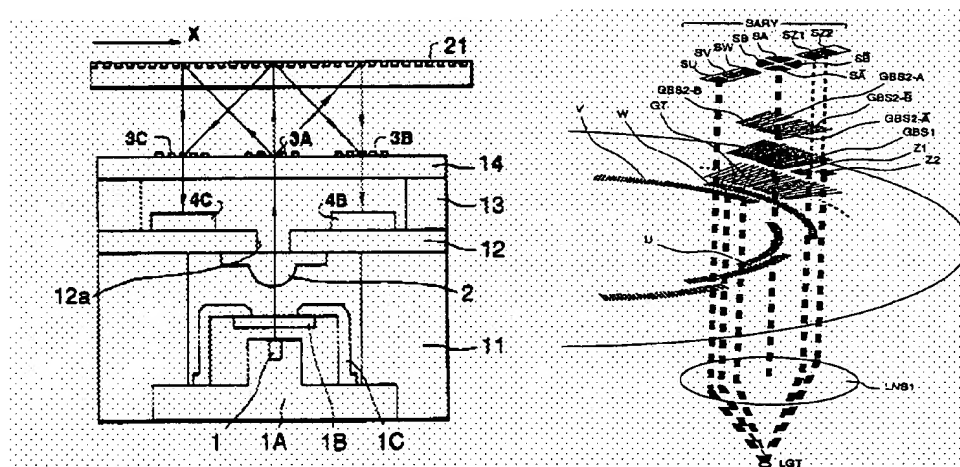
### DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**Claims 1-12 and 18-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishii et al (5,666,196) in view of Ishizuka (5,663,794).**



Regarding claim 1, Ishii (Fig. 3) discloses an apparatus comprising a holder 11 as a housing, a scanning unit with light course 1 and detectors 4B and 4C, a reflection graduation structure (diffraction grating) 21, and a group of diffraction gratings 3A-3C attached to the housing.

Ishii, however, fails to disclose the use of a graduated disk, and the reflection graduation structure is not attached to the housing; the trio of diffraction gratings are.

First, Ishizuka (Fig. 9) discloses the use of a disk D featuring varying diffraction gratings such as GT for use in a displacement information detection apparatus. As shown in Figure 14, this disk is located around a shaft SF to enable rotation. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a disk structure for the diffraction gratings of Ishii as per Ishizuka, since the diffraction gratings will generate the same light diffraction whether arranged in a line or in a circular pattern.

Additionally, while the exact arrangement and location of the elements of the apparatus has not been disclosed, it would have been obvious to one having ordinary skill in the art at the time the invention was made to make reflection grating 21 stationary and attached to the housing, while grating set 3A-3C is moveable on a disk as per Ishizuka above, since it has been held that rearranging parts of an invention involves only routine skill in the art. *In re Japikse*, 86 USPQ 70.

Although, in Ishii, the reflection grating is moving while the transmission grating is stationary, relative motion is being measured; the same results would be found if the reflection grating was stationary and the transmission grating was moveable. Furthermore, keeping all the elements of the invention enclosed in the same housing would be advantageous as it would keep the gratings in perfect working order, as the housing would prevent dust, dirt, and other unwanted particles from disrupting the gratings.

As to claims 2 and 20, it would be obvious to have a housing that is insensitive to oscillations, as a vibrating housing would cause fluctuations in the rotation of the disk, causing less than ideal results.

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As to claims 3-12, all the limitations contained therein focus on non-essential location and construction of the apparatus. Rearrangement of the elements of Ishii and Ishizuka is non critical, and it would have been obvious to one having ordinary skill in the art at the time the invention was made to arrange the elements as necessary, since it has been held that rearranging parts of an invention involves only routine skill in the art. *In re Japikse*, 86 USPQ 70.

As to claim 18, the disk of Ishizuka is rotated by motor MT and controlled by motor driver MD to enable desired rotation and movement of the disk.

As to claim 19, as shown in Figure 14 of Ishizuka, the disk D is located around a shaft SF to enable rotation.

As for claim 21, the arguments as discussed above disclose the claimed invention except for the neutral point lying in the plane of the graduated disk that defines a point where the disk can be rotated within a defined tolerance range. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the same neutral point with the disk of Ishizuka, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

**Claims 13-16 and 22-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishii et al (5,666,196) in view of Ishizuka (5,663,794) and in further view of Ito et al (6,154,278).**

Regarding claims 13-16, the combination of Ishii and Ishizuka as described above with regard to claim 1 discloses the elements of the apparatus. However, the combination fails to disclose a size representation for the arrangement of the gratings of the system.

Ito, however, discloses in equation 1 (Column 10, lines 39-63), that takes into consideration the refractive index of the material of the grating, the distance between the stationary and moving gratings, and the wavelength of the light source, in the construction of the gratings for an optical encoder that optically measures the displacement of a moving body.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use gratings of the construction disclosed by Ito in the combined device of Ishii and Ishizuka in order to generate a more exact measurement of the desired motion within the apparatus.

As for claim 22, it would be obvious to have compensation for undesired movement of the scanning graduation structure, as a lack of compensation would generate less than ideal results due to the unnecessary vibration.

As for claim 23, the arguments as discussed above disclose the claimed invention except for the neutral point lying in the plane of the graduated disk that defines a point where the disk can be rotated within a defined tolerance range. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the same neutral point with the disk of Ishizuka, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

**Claims 17 and 24-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishii et al (5,666,196) in view of Ishizuka (5,663,794).**

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Regarding claim 17, the combination of Ishii and Ishizuka discloses all the elements of the claimed apparatus as described in claim 1 except for the location of the scanning unit (light source and detectors) on a circular plate connected to the housing.

The light source and detectors of Ishii are already located within housing 11; therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to merely relocate those elements on a circular plate, since it has been held that rearranging parts of an invention involves only routine skill in the art, and placing the light source and detectors in a more central location would do nothing to change the functionality of the device. *In re Japiske*, 86 USPQ 70.

As for claim 24, it would be obvious to have compensation for undesired movement of the scanning graduation structure, as a lack of compensation would generate less than ideal results due to the unnecessary vibration.

As for claim 25, the arguments as discussed above disclose the claimed invention except for the neutral point lying in the plane of the graduated disk that defines a point where the disk can be rotated within a defined tolerance range. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the same neutral point with the disk of Ishizuka, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

### ***Response to Arguments***

Applicants' arguments filed July 12, 2004 have been fully considered but they are not persuasive. The applicants' arguments focus on the fact that the light, after being transmitted

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through the first diffraction grating, and then reflected off the second diffraction grating, fails to be transmitted a second time through the exact same diffraction grating (for instance, from grating 3 to grating 21 to gratings 3B and 3C in the Ishii reference). As amended, the claims state: "so that in effect the beams of light emitted by the light source are transmitted a second time through the measuring graduation structure, subsequent to the first time, wherein the beams of light transmitted the second time are directed along a direction that is opposite to a direction of transmission of the beams of light transmitted the first time". Nothing in the claim indicates that the light must pass through the exact same grating upon its second transition; the light only has to be transmitted through the structure a second time. Since gratings 3A, 3B, 3C, etc. of Ishii, as a whole, represent such a structure ("usually, the diffraction gratings are configured on a single transparent plate" (Col. 7, lines 3-4) and have the same pitch), the prior art still reads on the claim, and the rejection stands.

In further regard to the arguments against the Ito reference, the examiner notes that Fig. 17A fails to disclose the reflection graduation structure as pointed out by the applicants. However, the Ito reference was used for a different teaching as discussed above with regards to claim 13. Therefore, this argument is moot.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after



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the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael A. Lyons whose telephone number is 571-272-2420. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory J Toatley can be reached on 571-272-2800 ext. 77. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MAL  
August 20, 2004



**Samuel A. Turner**  
Primary Examiner